

VTrans Accelerated Bridge Program

2012 - 2015

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Accelerated Bridge Program (ABP)

- Initiated and endorsed by Secretary Searles in January 2012
- Jump Started – Tropical Storm Irene – 14 Bridge Replacement projects delivered within 24 months



Accelerated Bridge Program (ABP)

- Initiated and endorsed by Secretary Searles in January 2012
- Jump Started – Tropical Storm Irene – 13 Bridge Replacement projects delivered within 24 months
- ABP is the “Laboratory of Innovation” for delivering bridge projects
- Reorganized the Structures Design Section to promote innovative solutions through ABC

What is the ABP?

- Projects from existing funding programs that are identified as candidates at Project Definition
- ABP was created to accelerate the design and replacement of structures
- Programmatic approach to accelerating projects
- 24 month performance goal from project defined to procurement (80% to meet 24 months)
- By 2017 advertise all existing projects with Construction Funds Identified
- Strong and effective Project Management
- Aggressive but credible Projects Schedules

What is the ABP?

- Utilize short term road closures with Accelerated Bridge Construction(ABC)
- Eliminates need for temporary bridge construction
- Safer for workers and traveling public
- Reduces impacts to:
 - Environmental Resources
 - Utilities
 - Right-of-Way
- Reduced design costs
- Reduced design and construction durations
- Reduced mobility impacts



ABP Goals and Objectives

- Expedite the delivery of bridge reconstruction and bridge rehabilitation projects required to support the performance measures for bridge inventory conditions
 - Minimize project development and construction costs
 - Expedite Project Delivery
 - Utilize Accelerated Bridge Construction(ABC) Technologies
 - Standardize Project Plans
 - Utilize Alternative Contracting Methods



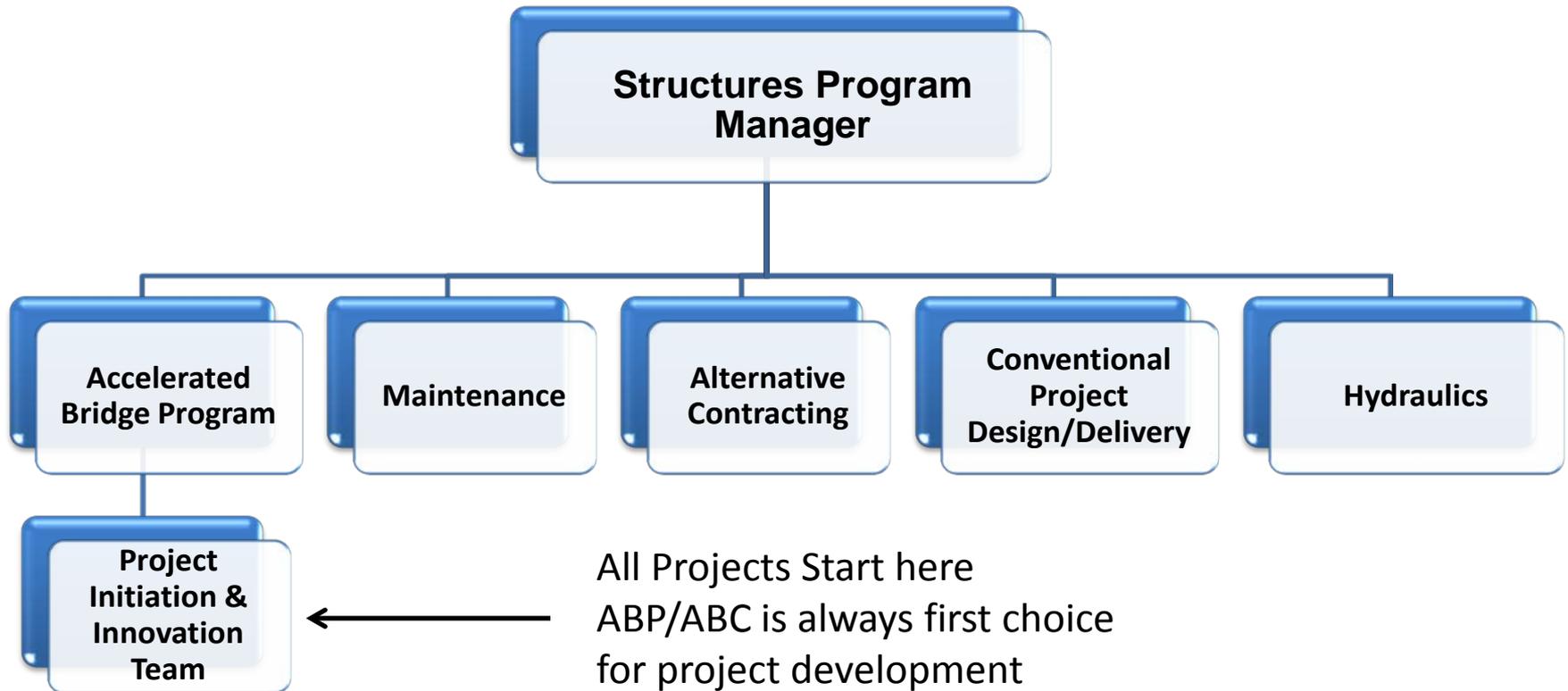
ABP Goals and Objectives

- Be a leader for deployment of Innovation at VTrans and Nationally
 - Maximize use of technology
 - Maximize flexibility for project delivery
 - Create a culture that values new ideas
 - Document successful innovations
 - Be an early adopter of research

ABP Goals and Objectives

- Be transparent to Stakeholders and Customers
 - Develop website with real time information on Performance
 - Implement best practices on Public Outreach
 - Leader among VTrans in developing and maintaining validated and credible project schedules
 - Partner with internal stakeholders and other Governmental stakeholders
 - Partner with Contractors and Fabricators to deliver best value to traveling public

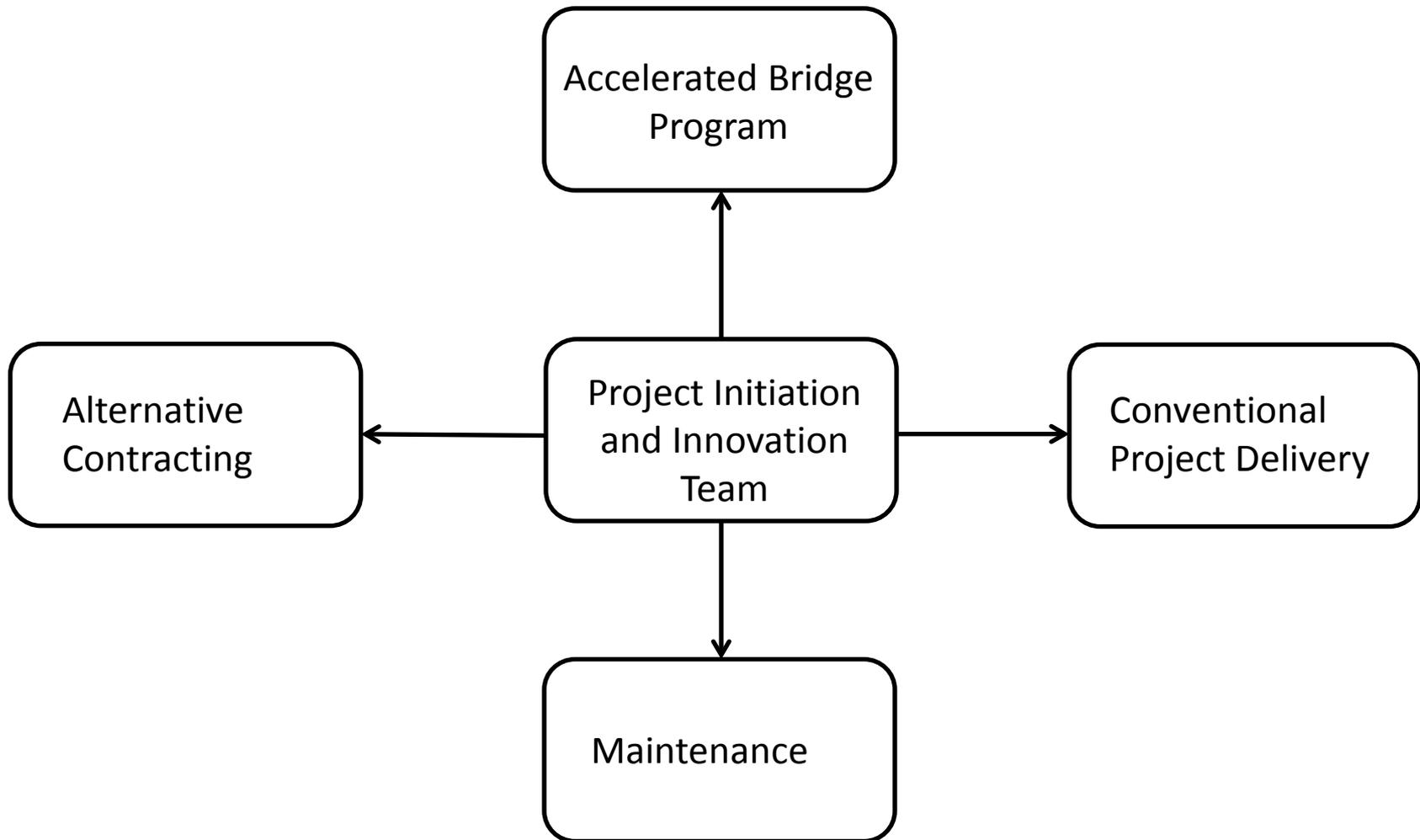
Structures Organizational Chart



Project Initiation & Innovation Team (Scoping)

- All bridge projects start here
 - Full Replacement
 - Rehabilitation
 - Major Maintenance
 - Painting
 - Membrane and Paving
 - Deck Patching
- Approximately 20-30 projects initiated and scoped per year. Goal of 25% delivered through the ABP
- Seek innovative solutions for all projects

Project Distribution



Accelerate Bridge Program
How are we Doing after
two years????



Accelerate Bridge Program – 2013 Construction

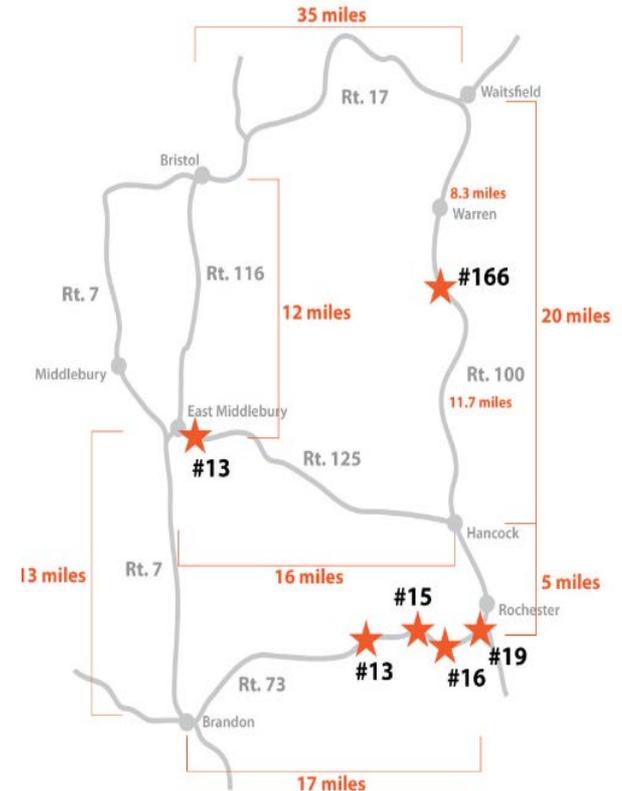
- 43% of all Structures projects were delivered through the ABP
- 9 Projects totaling \$9.7 million
- 3 projects utilized short term road closures
- 29% of all Structures projects constructed utilized ABC

Accelerate Bridge Program – 2014 Construction

- 40% of all Structures projects were delivered through the ABP
- 13 Projects totaling \$17.5 million
- 11 projects utilized short term road closures
- 65% of all Structures projects constructed utilized ABC

2014 ABC Highlighted Projects

- Middlebury/Rochester/Warren
- Six Bridge Replacement Projects:
 - Rochester VT 73 Bridge 13
 - Rochester VT 73 Bridge 15
 - Rochester VT 73 Bridge 16
 - Rochester VT 73 Bridge 19
 - Middlebury VT 125 Bridge 13
 - Warren VT 100 Bridge 166
- 5 sequenced road closures
- Alternating detour routes
- Need for Extensive Public Outreach



ABP Project Highlights for 2014



FAST 4 on VT 73 (Rochester Projects)





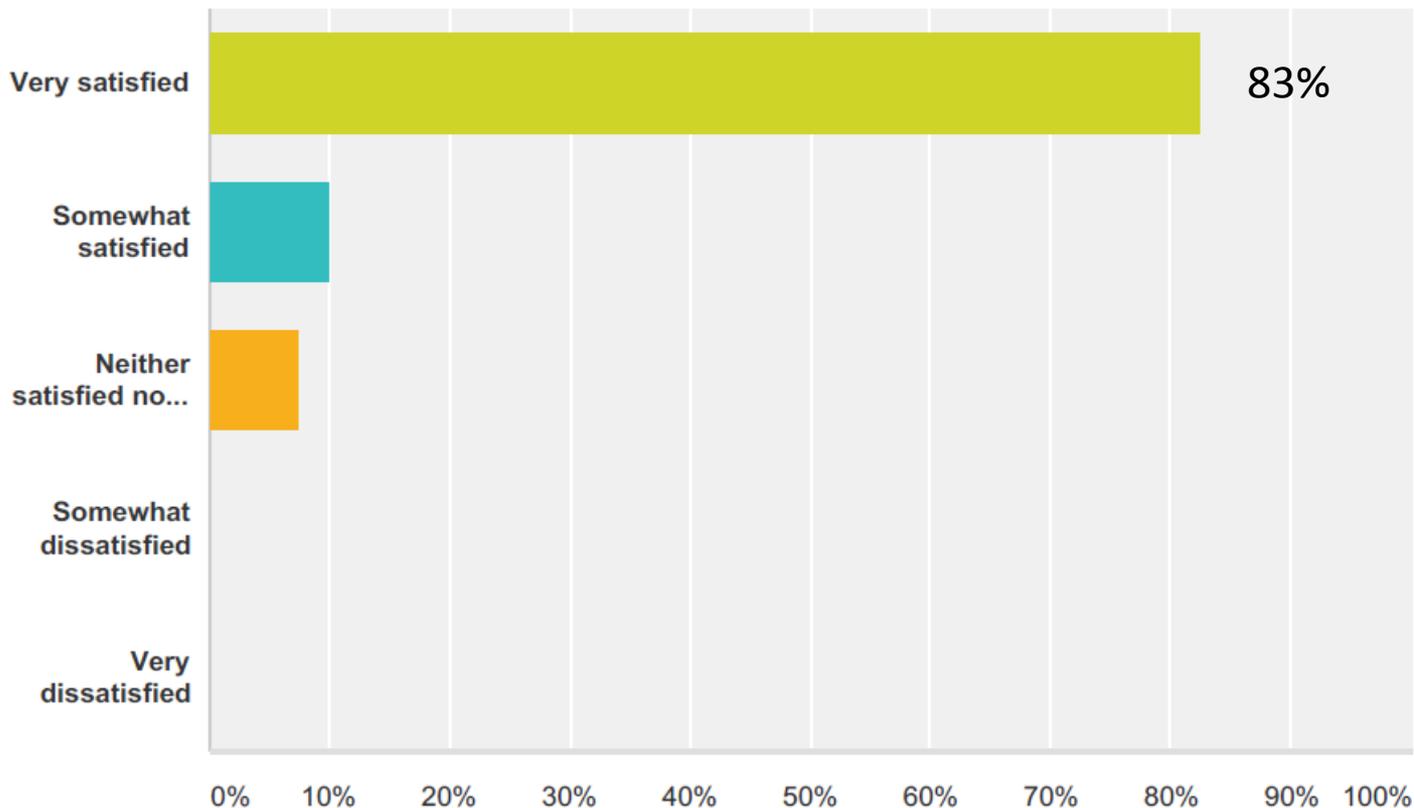




Middlebury Sand Hill Bridge

Customer Satisfaction:

Q6: The Rochester/Middlebury/Warren projects used an innovative Construction Method called Accelerated Bridge Construction which uses prefabricated bridge elements and road closures to reduce onsite construction time. How satisfied were you with the Accelerated Bridge Construction?





ER Projects Barnard & Cavendish

Innovative Construction Technology

- Fairfield Bridge in a backpack



Accelerate Bridge Program – 2015 Construction

- 26% of all Structures projects have been delivered through the ABP
- 6 Projects totaling \$16.8 million
- 6 projects utilized short term road closures
- 44% of all Structures projects constructed utilized ABC

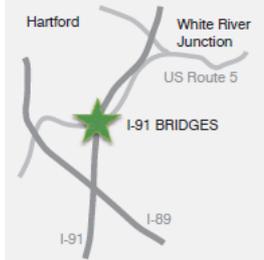
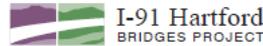
ABP - Innovative Construction and Contracting

- Hartford IM091-2(79) Bridges 43N and 43S
 - Designed using the Construction Manager/General Contractor (CM/GC) contracting model
 - Construction Innovation = Slide in Bridge Construction
 - Construct New bridges on Temporary supports adjacent to new existing structures
 - Construct supports for new bridges under existing bridges
 - Slide new Bridges into place during two 60 hour closures
 - Aggressive Project Outreach
 - Dedicated Project Outreach Coordinator
 - Several public meetings targeting various stakeholders
 - Project website <http://www.i91wrj.vtransprojects.vermont.gov/>
 - Updated Project Fact Sheets

Hartford Project Fact Sheet



Project Factsheet May 2014



HARTFORD (WHITE RIVER JUNCTION) I-91 BRIDGES (Hartford IM 091-2(79) project)

Project Location: Town of Hartford in Windsor County on Interstate 91 over Route 5 in White River Junction approximately one half mile north of the junction of I-91 and I-89.

Project Purpose: The purpose of this project is to replace the existing bridges that carry Interstate 91 north and southbound over US Route 5 in Hartford, safely, efficiently and with the least possible impact to road users and the surrounding community. The structures were built in 1966. Age, weather and use have taken a toll on the concrete deck, beams and abutments of the two bridges. Two new bridges will be built during the 2015 construction season.

Accelerated Bridge Program (ABP): The Hartford I-91 Bridges Project has been assigned to the Vermont Agency of Transportation (VTrans) Accelerated Bridge Program, an approach that delivers projects faster, often using innovative techniques and always in collaboration with local communities. Typically, fast track bridge projects are completed in approximately half the time that it would take by conventional construction, often in just one construction season.

By reducing the time it takes to construct a new bridge, VTrans has been able to save money spent on design, utility and ROW impacts, and road closures as well as minimize disruption to travelers and commerce. The ABP encourages streamlining, standardizing design and plan preparation while exploring innovative contracting and construction techniques.

Partnership is a hallmark of the ABP program – with contractors, innovators from other states and local communities. To date, 12 bridges have been rebuilt using the ABP since the program was established in 2012, with 13 planned in 2014.

PROJECT MILESTONES

- Preliminary Plans
 - April 2014
- Permitting
 - August 2014
- Right-of-Way Complete
 - August 2014
- Final Design
 - October 2014
- Contract Award
 - March 2015
- Target Construction Schedule
 - 2015



A Vermont First!

LATERAL SLIDE CONSTRUCTION

A construction method known as a lateral slide, will be used to replace the I-91 Hartford Bridges for the first time in Vermont. The slide will take place over two weekends, one for each bridge, but there will be a lot going on at the bridge site before the new bridges are slid into place. Here's how the project will work.

In the spring of 2015, construction will begin under the existing highway bridges. A new foundation (piers and abutments) or substructure will be built for each bridge. In addition, the replacement superstructure (bridge deck and support beams) will be constructed on temporary supports right next to the existing highway bridges. Both I-91 bridges will remain in service while construction is going on underneath and next to the bridges. Travel lanes on US Route 5 will be reduced from three lanes to two, but traffic will still flow in both directions throughout construction.

Once the new foundation and decks are constructed, the lateral, or sideways slide, can begin. VTrans will close

a portion of the Interstate and reroute traffic onto the established detour route. Then the contractor will remove the existing bridge and slide the new superstructure into place on top of the substructure by physically pushing or pulling the bridge into place along lubricated rails.

One bridge, either the northbound or southbound bridge, will be moved at a time. This will require a short closure period of I-91 over one weekend while the bridge is moved into place. The other bridge will remain open while the slide is occurring. Once securely in position, the bridge will be reopened to traffic. The lateral slide will be repeated for the second bridge on another weekend. Traffic on I-91 will resume in both directions when the both bridges have been installed.

The lateral slide method was chosen because it will cause the least possible impact to the road users and the surrounding community.



Step 1: Construct superstructure next to existing bridges



Step 2: Detour traffic and demolish the existing bridge



Step 3: Slide the new superstructure into place and reopen the bridge

BETTER ROUTE FOR BIKES & PEDESTRIANS

Besides building new highway bridges, VTrans is working with the Town of Hartford to improve the roadway environment for bicyclists and pedestrians along US Route 5. The span of the interstate bridges will be designed to accommodate a future 5' sidewalk and 5' grass buffer along US Route 5.

During construction there will be some changes to the I-91 southbound onramp that may become a permanent fixture. Potential bicycle and pedestrians improvements are still being reviewed.

DETOUR ROUTE

Road closures and detours for this project will be limited to two weekends. The detour routes are still under investigation and not yet finalized.

www.i91wrj.vtransprojects.vermont.gov

VALLEY NEWS

Slip and Span: I-91 Bridge Project To Use New 'Slide' Process

By Maggie Cassidy, Valley News Staff Writer
Saturday, May 24, 2014 (Published in print: Sunday, May 25, 2014)

White River Junction — Imagine the construction of two new bridges carrying Interstate 91 over Route 5 near the Veterans Affairs Medical Center, with only one weekend of interstate detours on the northbound side and a separate weekend of interstate detours on the southbound side, with Route 5 never closed.

Wishful thinking, you say?

Reality, officials respond.

Workers will use a relatively new construction process, never before employed in the Twin States, to replace the aging structures next summer.

"The way we're building this project is unique to Vermont," Kristin Higgins, of the Vermont Agency of Transportation, said during a public meeting about the project at the Bugbee Senior Center last week. "We're very excited about it."

Lateral slide construction, as it's known, entails four major steps: building new bridge supports under the old bridges, building new bridges next to the old bridges, demolishing the old bridges, then sliding the new bridges onto the new supports.

Advocates say the benefits are plenty: In addition to minimizing the impact on commuters and travelers, lateral slide construction is significantly safer than

Indeed, Higgins said, the I-91 bridges were chosen as Vermont's first foray into lateral slide construction largely for two reasons: First, there was enough room around the bridges for the construction to take place, which often isn't the case, Higgins said.

And second, there's "a lot of things going on in one area" with the interchange connecting I-91 and I-89, underscoring the need for a safety-centered construction approach.

"The safety is the big one, and the interchange ... sometimes it's really hard," said Higgins, the structures project manager for the agency's Accelerated Bridge Program, in an interview after last week's presentation. "So now you throw in a traffic pattern change and cones and barrels, and next thing you know you've got a truck ramming through the medians because they don't know."

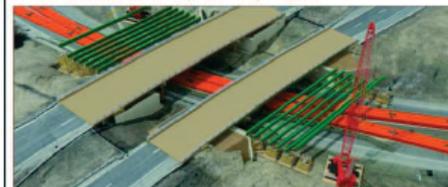
The advantages, though, come with a significant cost: Higgins said current estimates for the project are around \$3 million per bridge, or \$6 million total.

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THE BIG SLIDE

Replacement of the Interstate 91 bridges over Route 5 in Hartford will mark the first time that a process called lateral slide construction is used in the Twin States. Also known as bridge slide-

in construction, the process essentially entails building new bridges next to the old bridges, demolishing the old bridges, then sliding the new bridges into place.



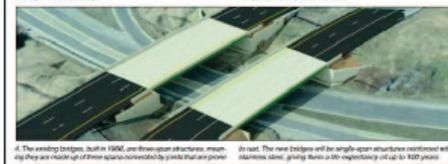
1. After constructing new bridge abutments behind the existing ones, workers will construct new bridges on temporary supports next to the existing bridges. Construction officials say they expect

to close Route 5 for up to about 20 minutes at a time in the middle of the night when they lay down the steel beams and pour concrete. Traffic can continue on I-91 throughout this part of the process.



2. Sometimes during August or September of 2015, workers will demolish the northbound side for construction and remove the existing northbound bridge.

3. Before the end of the demolition, they will attach the new northbound bridge into place. On a separate weekend, they will repeat the process for I-91 southbound.



4. The existing bridges, built in 1992, are three-span structures. When they are made up of three spans, construction is made by yards that are joined

to each other. The new bridges will be single-span structures reinforced with stainless steel, giving them a life expectancy of up to 100 years.

Source and images: Vermont Agency of Transportation and PCF.

VALLEY NEWS — SHAWN BRADLEY

conventional bridge replacement, they say, because it moves the bulk of construction away from traffic and reduces the risk of vehicles crashing into work sites.

Accelerate Bridge Program – 2016 Construction

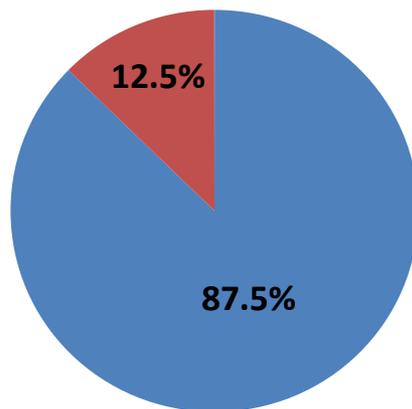
- 50% of all Structures projects are being delivered through the ABP
- 8 Projects totaling \$12.4 million
- 7 projects utilized short term road closures
- 53% of all Structures projects constructed utilized ABC

What is the ABP?

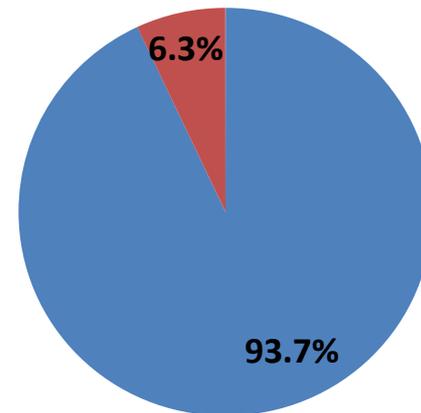
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2012 Existing Projects with Construction Funds

- In 2012
 - 128 Projects had construction funding in capital Program
 - Structures Program Goal advertise all by 2017
 - Included many “Legacy” projects
 - Result by 2017 oldest projects in program are 5 years
- Use ABC and Expedited Project Delivery strategies to deliver all projects
- 87.5% of Structures 128 projects have been delivered to Construction



% delivered to date



**% Projected Delivery
(End of Calendar Year 2015)**

Accelerated Bridge Program Highlights

- National ABC conference in Miami
 - Two Travel Scholarships Awarded to ABP Project Managers
 - Two presentations by Project Managers
 - VTrans' Programmatic Approach to ABC and Public Outreach
 - Rochester fast 4 on VT Route 73
- C19 Grant for Expedited Project Delivery
 - Revising project delivery model to expedite project delivery by incorporating nationally proven strategies
- T2 Technology Grant
 - ABP Brand developed
 - ABP Website Development

Accelerated Bridge Program Highlights

- Act 153
 - Local share reduced on town highway projects for bridge replacement projects that use road closures
 - Highly successful at propelling widespread adoption of ABC
 - Very popular and many towns have elected to close roads since legislation
- ABP Promotional Videos
 - <https://www.youtube.com/user/VTransTV>

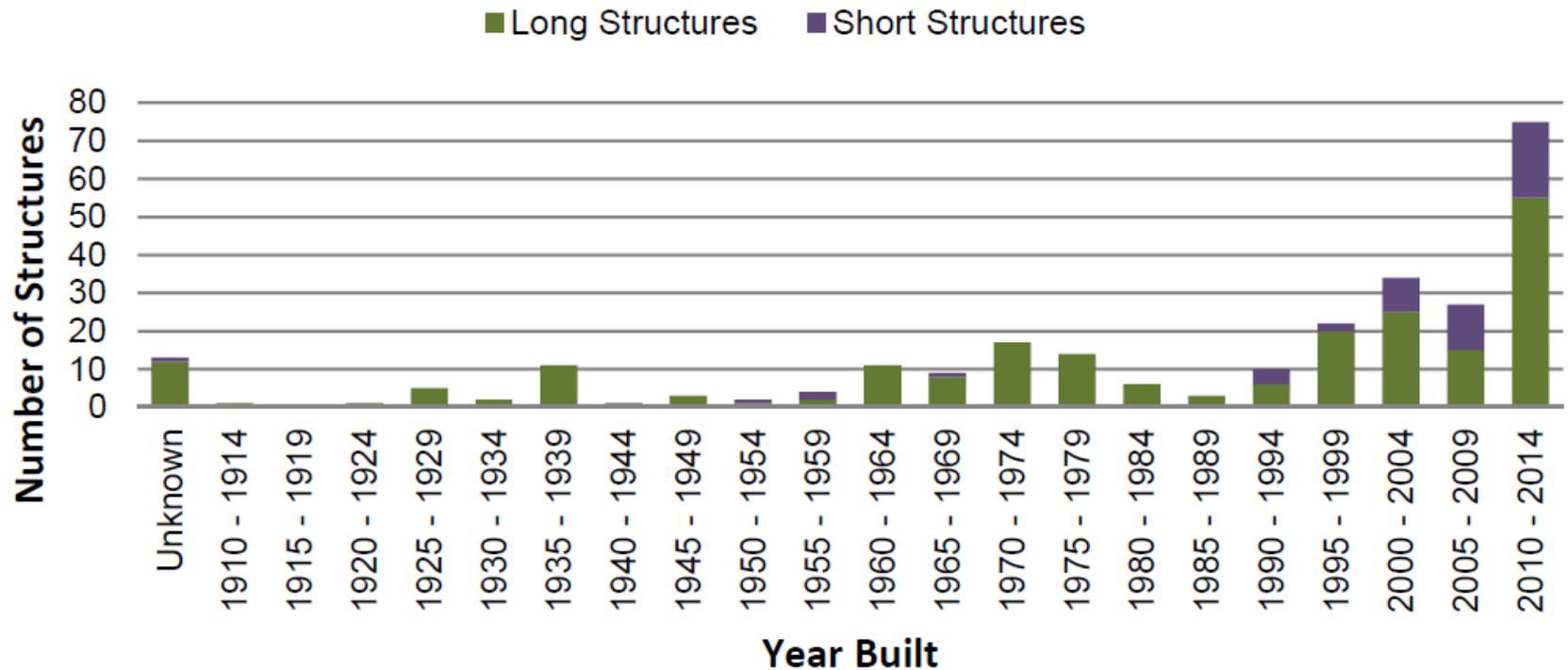
Accelerated Bridge Program Highlights

- Standardized Precast Bridge Elements and Systems (PBES)
 - Continue to collaborate with industry and delivery high quality bridge elements
- ABC Workshop in Virginia
 - Presented VTrans approach to standardized details and adoption of Precast Bridge Elements and Systems

Precast Bridge Elements and Systems

Precast History and Trends

*includes those that are precast, prestressed and segmental



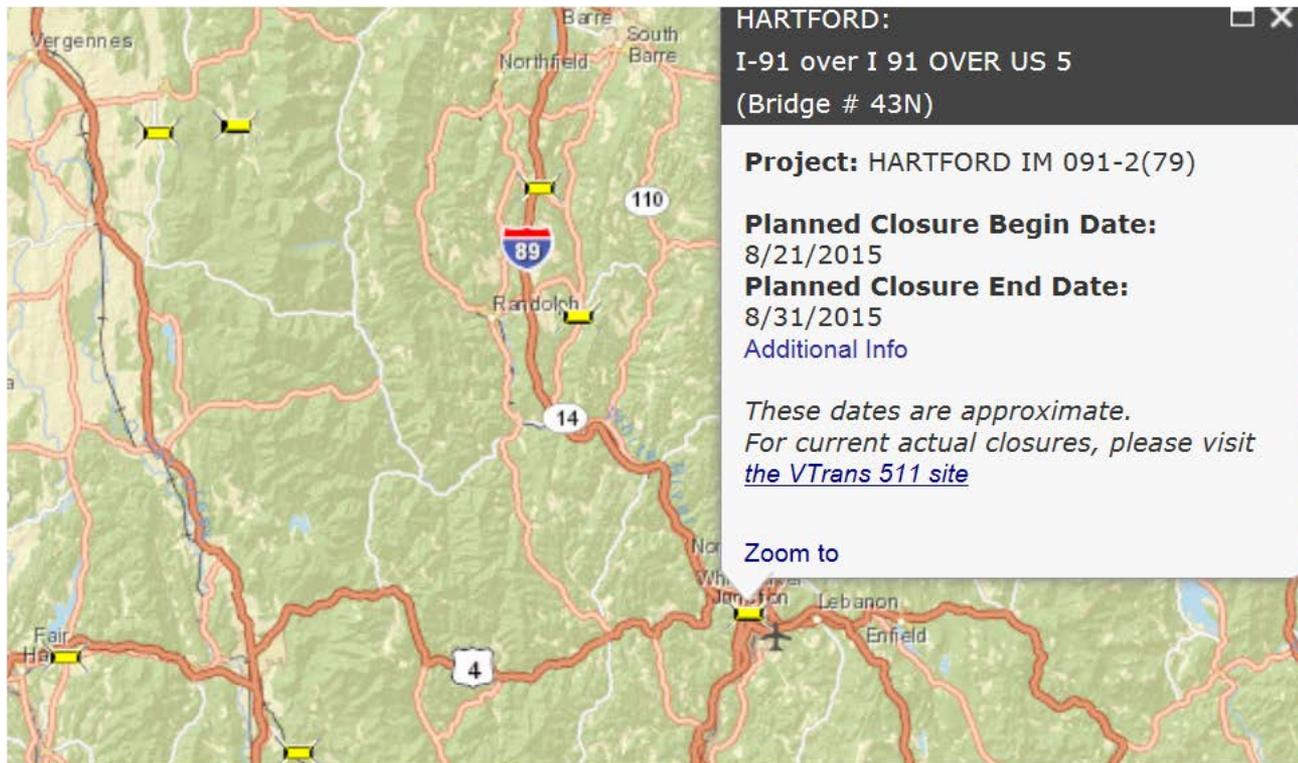
Accelerated Bridge Program Public Outreach

- Public Outreach
 - Outreach starting at Project Initiation and continues through construction
 - Identify and engage all stakeholders
 - Credible schedules

- Tailored public outreach plans
 - Project factsheets/websites
 - Dedicated outreach professionals
 - Pre-closure public information meetings
 - Weekly construction updates

Accelerated Bridge Program Public Outreach

- Bridge Closure Map
 - Bridge closures identified on an interactive map making it easier for customers to plan accordingly



Fun Facts about the ABP

- 23 projects since 2011 using ABC and Short term road closures
- \$44 Million in Projects delivered through the Accelerated Bridge Program since 2012
- 14 Projects (\$23 Million) Delivered by the In-house Design team
- 13 Projects (\$21 Million) Delivered by Consultant firms
- In-House Engineering/Construction Costs = 12%
- Consultant Engineering/Construction Costs = 20%

Future Direction of ABP

- 20-40% projects programed to be developed within the ABP
- 30-40% of all projects utilize Accelerated Bridge Construction technologies.
- Continue to meet performance goal of 24 month project delivery timeframe
- When appropriate take lessons learned from ABP and institutionalize them for all bridge projects
- Continued focus on public outreach

Important Links

Structures Web Page

<http://vtransengineering.vermont.gov/bureaus/pdb/structures>

Bridge Closure Map:

<Http://vtransmaps.vermont.gov/bridgeclosures/map.htm>

Hartford Slide In Bridge Construction Web Page:

<http://www.i91wrj.vtransprojects.vermont.gov/>

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